

Preliminary Amendment
Continuation of 09/457,254

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Patent Application Serial No. 09/456,456, filed on even date herewith, entitled NEEDLE-
LESS INJECTION APPARATUS AND METHOD. --

In the Claims

Please cancel claims 1-27 in their entirety without prejudice or disclaimer and add the
following new claims:

-- 28. (New) A catheter comprising:

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a shaft having a proximal end and a distal end, the distal end of the shaft including a
primary penetrating member and at least one secondary penetrating member, wherein the
primary penetrating member is adapted to penetrate tissue in a first direction, and wherein the
at least one secondary penetrating member is retractable to a position within the primary
penetrating member and penetrates the tissue in a second direction different from the first
direction when extended from the primary penetrating member.

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29. (New) The catheter of claim 28, wherein the tissue is selected from the group
consisting of tumors, heart, lung, brain, liver, kidney, bladder, urethra, ureters, eye, intestines,
stomach, pancreas, ovary, prostate, skeletal muscle, smooth muscle, breast, cartilage and
bone.

30. (New) The catheter of claim 28, wherein the at least one secondary penetrating
member comprises microneedles.

31. (New) The catheter of claim 28, wherein the second direction is generally
perpendicular to the first direction.

32. (New) The catheter of claim 28, wherein the second direction is at an angle
of about 5 to about 90 degrees relative to the first direction.

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33. (New) A catheter system comprising:
a pressurized fluid source including fluid therein; and
a catheter having a proximal end and a distal end, wherein the proximal end of the catheter is connected to the pressurized fluid source, wherein the distal end of the catheter includes a primary penetrating member and at least one secondary penetrating members, wherein the primary penetrating member is adapted to penetrate tissue in a first direction, and wherein each of the at least one secondary penetrating members is retractable to a first position within the primary penetrating member and a second position extended from the primary penetrating member, with each of the at least one secondary penetrating members having a lumen in fluid communication with the pressurized fluid source such that fluid may be delivered to the tissue via the secondary penetrating members.

34. (New) The catheter system of claim 33, wherein the secondary penetrating members penetrate the tissue in a second direction different from the first direction when extended from the primary penetrating member.

35. (New) The catheter system of claim 33, wherein the second direction is generally perpendicular to the first direction.

36. (New) The catheter system of claim 33, wherein the second direction is at an angle of about 5 to about 90 degrees relative to the first direction.

37. (New) The catheter system of claim 33, wherein the tissue is selected from the group consisting of tumors, heart, lung, brain, liver, kidney, bladder, urethra, ureters, eye, intestines, stomach, pancreas, ovary, prostate, skeletal muscle, smooth muscle, breast, cartilage and bone.

38. (New) The catheter system of claim 33, wherein the fluid comprises at least one therapeutic agent.

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39. (New) The catheter system of claim 33, wherein the at least one secondary penetrating member comprises microneedles.

40. (New) A method of delivering fluid to an injection site of tissue of a patient comprising:

providing a catheter comprising a shaft having a proximal end and a distal end, the distal end of the catheter including a primary penetrating member and at least one secondary penetrating members, wherein the primary penetrating member is adapted to penetrate tissue in a first direction, and wherein each of the at least one secondary penetrating members is retractable within the primary penetrating member and penetrates the tissue in a second direction different from the first direction when extended from the primary penetrating member;

inserting the catheter into the patient;

navigating the catheter until the distal end of the catheter is positioned adjacent the injection site;

actuating the primary penetrating member with the at least one secondary penetrating member retracted within the primary penetrating member such that the primary penetrating member penetrates the tissue at the injection site in a first direction;

actuating the at least one secondary penetrating member by extending the at least one secondary penetrating member from the primary penetrating member such that the at least one secondary penetrating member penetrates the tissue in a second direction different from the first direction; and

injecting the fluid into the tissue via the at least one secondary penetrating member.

41. (New) The method of claim 40, wherein the tissue is selected from the group consisting of tumors, heart, lung, brain, liver, kidney, bladder, urethra, ureters, eye, intestines, stomach, pancreas, ovary, prostate, skeletal muscle, smooth muscle, breast, cartilage and bone.